

REMARKS

Entry of the amendments is respectfully requested. Claims 1-34 are pending in the application. Claims 1, 3, 6, 7, 10, 11, 18 and 27 have been amended. Favorable reconsideration and allowance of this application is respectfully requested in light of the amendments and the foregoing remarks.

1. Technical Amendments

a. Amendments to the Specification

The specification has been amended, without adding new matter, to maintain *ipsus verbus* support for the amended claims. Specifically, the specification has been amended to remove any incorporation by reference to specific claims. The specification has been amended to include direct references to those limitations previously incorporated by reference.

b. Amendments to the Drawings

The drawings have been amended to better comply with 37 CFR 1.21(d) and to replace the hand written figure numbers as suggested by the Examiner.

2. Rejections Based on the Prior Art

Claims 1-4, 10-13 and 15 stand rejected under 35 U.S.C. §102(b) as being anticipated by Seitz. Claims 1-3 and 10-12 stand rejected under 35 U.S.C. §102(e) as being anticipated by Hirayama et al. Claims 1-3 and 10-12 stand rejected under 35 U.S.C. §102(e) as being anticipated by Covillion. Claims 4-7 and 10-12 stand rejected under 35 U.S.C. §103(a) as being

unpatentable over Hirayama et al. in view of Rudlich, Jr., et al. Claims 18-20 and 27-29 stand rejected under 35 U.S.C. §103(a) as being unpatentable over Beetz et al. in view of Hirayama, et al. Claims 21-24 and 30-33 stand rejected under 35 U.S.C. §103(a) as being unpatentable over Beetz et al. in view of Hirayama, et al. in further view of Rudlich, Jr., et al.

a. Recapitulation of the Invention¹

The invention relates to a novel heating device that includes a plurality of heating elements. The allocation of the control signals to the heating elements are preferably varied at predetermined time intervals. Thus, the respective currents supplied to the heating elements are exchanged so that the heating elements are controlled successively by different control channels. A homogenous heating is achieved because each heating element has a separate channel allocated to it.

The invention is achieved in that each heating element is only heating **a portion of the total airflow to be heated**. This is unique from the prior art wherein the heating elements heat the same medium in sequential or alternating order. Furthermore, the individual heating power for each heating element is changed at predetermined time intervals. Accordingly, each heating power applied to a particular heating element for a particular time interval can be applied to another heating element after lapse of the predetermined time interval.

¹ This Section 2a is intended to provide the Examiner with some background information on the state of the art and applicants' contribution to it. It is *not* intended to distinguish specific claims from the prior art. That task is performed in Section 2b below.

b. Traversal of Rejections

Applicants respectfully traverse the above referenced rejections because the cited references, as discussed below, do not disclose each and every element of the novel subject matter as set forth in the claims. Therefore, reconsideration is in order and is respectfully requested.

At least most of the elements of the electric heating device as described above are recited in apparatus claims 1 and 18. Similar limitations are found in amended claims 10 and 27, directed to the method of controlling the electric heating device. Each of these limitations are neither disclosed nor suggested by the prior art relied upon in the rejections. Specifically, none of the references relied upon disclose a heating apparatus wherein each heating element is only heating **a portion of the total airflow to be heated.**

Seitz et al, for instance, does not disclose a heating apparatus where each heating element is only heating a portion of the total airflow to be heated. The invention relates to a fluid heating apparatus. Referring to Fig. 1, the fluid to be heated sequentially flows through multiple connected chambers 20, 28, 38, and 40. Each chamber includes a heating element 22, 34, 44 and 50. A heating demand for the water is equally distributed between the heating elements and the heating elements are activated in a consecutive manner. The activation and de-activation of the heating elements is set depending on the total heating power required. For example, if the demand for heating is very low, the consecutive activation of each of the heating elements for an equal activation period is followed by a long period of de-activation for all of the heating

elements. If the heating load increases, the period of de-activation is shortened until the activation of the last heating element immediately followed by the re-activation of the first heating element. If the heating load is further increased, the first heating element may be reactivated a second time while one of the other heating elements is still activated.

Thus, while Seitz et al. discloses a heating system wherein the heating demand is distributed over a plurality of heating elements, as well as a heating system wherein the heating power of the individual heating elements varies at predetermined intervals, it does disclose distributing the required heating spatially such that a heating element is only heating a particular portion of the total airflow (medium flow) to be heated. In the claimed invention, the individual heating power applied to different heating elements is exchanged or permuted in predetermined intervals such that each heating element only heats a portion of the total airflow to be heated. In contrast, the Seitz et al. reference discloses distributing the required heating power in a temporal relationship such that the total required heating power is only applied within a predetermined period of time. The same quantity of water is heated by each heating element in a consecutive manner. There is no disclosure in Seitz et al. of distributing the required heating power in spatial respect such that different heating elements heat different portions of the medium to be heated.

In a similar manner, Hirayama et al. fails to disclose a system wherein each heating element is only heating a portion of the total airflow to be heated. Hirayama relates to a state control apparatus for controlling the heating power of a furnace 10 that includes a plurality of separate heating zones 21, 22, 23 and 24. The state control apparatus controls the heating power

to be applied by each heating zone individually and only activates one of the heating zones at a time. Hirayama merely describes distributing the total heating power among heating zones temporally. There is no suggestion of distributing the heating power spatially. Furthermore, Hirayama does not disclose an exchange or permutation of a plurality of heating powers. In contrast, Hirayama merely discloses the consecutive activation of an individual heating power.

Covillon also fails to disclose a heating element wherein the heating powers are exchanged or permuted to individual heating elements such that each heating element is only heating a portion of the total airflow to be heated. Covillion discloses an electric heating device employing a plurality of heating means. In order to prevent excessive heating current demands stemming from the individual heating power requirements of each of the individual heating means 10, the heating means are controlled such that only a single heating means is activated at a time. There is no disclosure of providing a system wherein each heating element is heating only a portion of the total airflow to be heated

A review of the remaining cited references fails to teach or suggest the recited limitations in claim 1, 10, 18 and 27. Specifically, none of the remaining references disclose an apparatus wherein each heating element is only heating **a portion of the total airflow to be heated.** Hence, withdrawal of the rejections is respectfully requested.

The various dependent claims are believed to be in condition for allowance for incorporating by reference the limitations of claim 1, 10, 18 and 27 and for reciting additional

features which, when considered with the limitations of claims 1, 10, 18, and 27 are neither disclosed nor suggested by the prior art relied upon in the rejections.

CONCLUSION

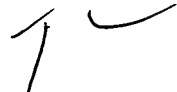
It is submitted that claims 1 and 3-34 as amended are in compliance with 35 U.S.C. §§ 102 and 103 and each defines patentable subject matter. A Notice of Allowance is therefore respectfully requested.

No fee is believed to be payable with this communication. Nevertheless, should the Examiner consider any other fees to be payable in conjunction with this or any future communication, the Director is authorized to direct payment of such fees, or credit any overpayment to Deposit Account No. 50-1170.

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The Examiner is invited to contact the undersigned by telephone if it would help expedite matters.

Respectfully submitted,



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